Center, Boston, Massachusetts, USA and [5]Department of Medicine, Division of Nephrology, St. Elizabeth's Medical Center, Boston, Massachusetts, USA
Correspondence: *Nicolaos E. Madias, Department of Medicine, Division of Nephrology, St. Elizabeth's Medical Center, Boston, Massachusetts, USA. E-mail: nicolaos.madias@caritaschristi.org*

Kidney International (2010) **77,** 744–745; doi:10.1038/ki.2009.556

Acute kidney injury and long-term outcomes: more to learn

To the Editor: In a retrospective case–control study, Lo *et al.*[1] concluded that hemodialysis-requiring acute renal failure (HD-ARF) was associated with an increased risk of end-stage renal disease (ESRD) and all-cause mortality. This finding is in concordance with recent studies demonstrating an association between HD-ARF and progression to ESRD, as well as the increased long-term mortality risk associated with all severity stages of acute kidney injury (AKI).[2–4] Although the authors used changes in serum creatinine (sCr) for classification of HD-ARF, it is not clear whether the same methodology was used for selection of the control group, assuring that patients with less severe AKI were not misclassified, leading to potential underestimation of risk.

In a study of 10,518 patients who were discharged after major surgery, in which AKI was defined using changes in sCr, AKI patients not requiring dialysis comprised >85% of the AKI cohort and had significantly higher rates of mortality compared with patients with no AKI.[2] Even for patients with complete renal recovery at the time of discharge, the mortality risk was higher compared with patients without an episode of AKI.[2] Hence, less severe stages of AKI may have a more profound effect on post-discharge morbidity and mortality than previously appreciated, and the risk of progressive chronic kidney disease among these patients has been inadequately studied. We agree with the authors that in contemporary practice only a minority of AKI patients are subjected to any kind of follow-up regarding the progression of kidney disease. Future studies determining the optimal post-discharge monitoring and care of AKI patients are warranted.

ACKNOWLEDGMENTS
AB is supported by award K30RR022258 from the National Center For Research Resources. The content is solely the responsibility of the authors and does not necessarily represent the official views of the National Center for Research Resources or the National Institutes of Health.

1. Lo LJ, Go AS, Chertow GM *et al.* Dialysis-requiring acute renal failure increases the risk of progressive chronic kidney disease. *Kidney Int* 2009; **76**: 893–899.
2. Bihorac A, Yavas S, Subbiah S *et al.* Long-term risk of mortality and acute kidney injury during hospitalization after major surgery. *Ann Surg* 2009; **249**: 851–858.
3. Newsome BB, Warnock DG, McClellan WM *et al.* Long-term risk of mortality and end-stage renal disease among the elderly after small increases in serum creatinine level during hospitalization for acute myocardial infarction. *Arch Intern Med* 2008; **168**: 609–616.
4. Wald R, Quinn RR, Luo J *et al.* Chronic dialysis and death among survivors of acute kidney injury requiring dialysis. *JAMA* 2009; **302**: 1179–1185.

Azra Bihorac[1], Jesse D. Schold[2] and Charles E. Hobson[3]
[1]Department of Anesthesiology, Division of Critical Care Medicine, University of Florida College of Medicine, Gainesville, Florida, USA; [2]Department of Quantitative Health Sciences, Cleveland Clinic Foundation, Cleveland, Ohio, USA and [3]Department of Surgery, University of Florida College of Medicine, Gainesville, Florida, USA
Correspondence: *Azra Bihorac, Department of Anesthesiology, Division of Critical Care Medicine, University of Florida College of Medicine, 1600 SW Archer Road, PO Box 100254, Gainesville, Florida 32610-0254, USA. E-mail: abihorac@anest.ufl.edu*

Kidney International (2010) **77,** 745; doi:10.1038/ki.2009.554

The Authors Reply: We thank Dr Bihorac and colleagues very much for their letter[1] and interest in our recent matched cohort study.[2] We included all patients who did not suffer dialysis-requiring acute renal failure in the control group. We believe that had we removed from the control group those with non-dialysis requiring acute renal failure, our observed large effect size would be even greater. We agree that more research should be conducted regarding the long-term sequelae of non-dialysis requiring acute renal failure. This is one of the key goals of the ongoing Assessment, Serial Evaluation, and Subsequent Sequelae in AKI longitudinal cohort study sponsored by the National Institutes of Health (http://grants.nih.gov/grants/guide/rfa-files/RFA-DK-07-009.html).

1. Bihorac A, Schold JD, Hobson CE. Acute kidney injury and long-term outcomes: more to learn. *Kidney Int* 2010; **77**: 745.
2. Lo LJ, Go AS, Chertow GM *et al.* Dialysis-requiring acute renal failure increases the risk of progressive chronic kidney disease. *Kidney Int* 2009; **76**: 893–899.

Chi-yuan Hsu[1], Lowell J. Lo[1] and Alan S. Go[2]
[1]Division of Nephrology, University of California, San Francisco, California, USA and [2]Division of Research, Kaiser Permanente of Northern California, Oakland, California, USA
Correspondence: *Chi-yuan Hsu, Division of Nephrology, University of California, 513 Parnassus Avenue, 672 HSE, San Francisco, California 94143-0532, USA. E-mail: hsuchi@medicine.ucsf.edu*

Kidney International (2010) **77,** 745; doi:10.1038/ki.2009.555